

## A new species of *Livonia* (Gastropoda: Volutidae) from Northwest Australia

P. BAIL

Square La Fontaine 2, F-75016 Paris, France.

**KEYWORDS.** Gastropoda, Volutidae, N.W. Australia, *Livonia limpusi* nov. sp.

**ABSTRACT.** *Livonia limpusi* is described from deep water of Northwest Australia. It is compared with *Livonia roadnightae* (McCoy, 1881) and *Livonia mammilla* (Sowerby 1, 1844).

### INTRODUCTION

Early in the eighties, several experimental trawlings were made by shrimp boats along the West Australian shores. Many of these have led to the discovery of unknown populations of Volutidae, e.g. *Calliotectum dalli claydoni* (Poppe, 1986), *Calliotectum tibiaeforme forma dupreyae* (Emerson, 1985), *Amoria rinckensi* Poppe, 1986, and *Livonia joerinkensi* (Poppe, 1987).

Unfortunately, many hauls were very poor in shrimps and trawling was not continued in these regions; most of the prospected areas are now deserted.

Some hauls were very productive in shells and yielded several specimens of unknown species in apparently restricted areas, among them the new Volutidae here described.

### SYSTEMATICS

Family **VOLUTIDAE** Rafinesque, 1815

Subfamily **Zidoninae** H. & A. Adams, 1853

Genus *Livonia* Gray, 1855

*Livonia limpusi* nov. sp.

Figs. 1-10, 15a

#### Type material.

Holotype. Length (L): 133.4 mm, width (W): 65.5 mm. WAM S.12011 (West Australian Museum, Perth, West Australia). (Figs. 1-2).

Paratype 1. L: 114.8 mm, W: 61.2 mm. Bail coll. (Figs. 3-4).

Paratype 2. L: 100.5 mm, W: 50.0 mm. Limpus<sup>1</sup> coll. (Figs. 5-6).

Paratype 3. L: 125.9 mm, W: 64.3 mm. Limpus coll. (Figs. 7-8).

Paratype 4. L: 116.0 mm, W: 63.0 mm. Douté<sup>2</sup> coll. (Fig. 9).

Paratype 5. L: 111.1 mm, W: 59.4 mm. Bail coll.

Two additional specimens examined in private collections.

#### Type locality.

The type locality still remains uncertain. It is reliably located in a square demarcated by Broome, Karratha, Rowley Shoals and Scott Reef. Waters off Karratha seem to be the most probable area. Some specimens are presumed to come from Scott Reef. This locality seems to be uncertain because no specimen of *Livonia limpusi* was ever recorded so far north, whereas trawlings were so productive for the above mentioned taxa. Anyway, the geographical distribution of *L. limpusi* is the most northern locality ever recorded for a *Livonia* species.

#### Habitat.

Unknown. Probably on muddy bottom at 150-300 m deep.

#### Description.

Shell very small for the genus, solid, heavy for its size, ovate shaped with glossy surface. Protoconch large, slightly oval (diameter of holotype protoconch: 15.3 mm) globose with one and a half rounded first whorl. Nuclear and part of first whorl situated laterally, deviated at 90° on its vertical axis. Spire low, consisting of two smooth slightly convex whorls. Body whorl large without shoulder, smooth, of a regular shape with shiny surface when fresh. Sculpture of

<sup>1</sup> McKewen Street 6, Bundaberg 4670, Queensland, Australia

<sup>2</sup> Am Wieserain 11, D-79713 Bad-Säckingen-Harpolingen, Germany

spiral ridge stronger below suture and on anterior tip, almost obsolete on middle of body whorl. Aperture large, forming 80% of total shell length. Outer lip beveled, slightly everted, forming a rounded angle when merging backwards to body whorl. Columella arched with four thick inequal plaits. Siphonal notch wide, very shallow. Fasciole absent.

Base flesh to whitish with on some shells a pattern of large axial zigzag brown lines forming an open tent-like design (Fig. 10), close to *L. mammilla* (Sowerby I, 1844).

Uniformly coloured shells seem to be more common than the patterned ones (6 versus 2 of the examined shells).

Animal and radula unknown.

### Discussion.

This species obviously belongs to the genus *Livonia*: particular shell characteristics, extremely large globose protoconch, shape and pattern.

It is closely related to *L. roadnightae* (McCoy, 1881) and *L. mammilla* (Sowerby I, 1844).

*Livonia roadnightae* has an extremely large geographical range, from Port-Stevens (New South Wales) to Alhobros Islands (West Australia) (see Fig. 20). This species shows no noticeable variation along its range. It differs from *L. limpusi* by its bigger size (average length: 180 mm), by its strongly shouldered shape with thick axial ribs, and by its colour pattern made of large, irregular, blackish fine zigzag lines, never forming true tent-like design as in *L. limpusi* (Figs. 11-12)

Comparison of a juvenile of *L. roadnightae* and a juvenile of *L. limpusi* shows the difference (Figs. 15a-15b).

According to its northernmost range, *L. roadnightae* seems to be sympatric with *L. limpusi* in a narrow area. However, this is not yet proved because of current insufficient exploration.

*Livonia mammilla* is an eastern species whose range extends from Bass Strait and East Tasmania to east of Swain Reefs (Queensland) (see Fig. 20). Although it has the same smooth shape and the same pattern of open tent-like lines (Figs. 13-14), it differs by its giant size and bulbous protoconch, its lighter structure and its smooth surface without spiral ridges. See also the comparison of a juvenile of *L. mamilla* and a juvenile of *L. limpusi* (Figs. 15a-15c).

According to our current knowledge of its distribution, a 5,000 km gap of allopatry excludes conspecificity with *L. limpusi*.

### Remarks.

Several problematic shells were recently discovered at a depth of 130-160 m, in an area between Kalbarri and Shark Bay. These shells are F.A.V. 293m (ABBOTSMITH, 1969), a juvenile specimen from the West Australian Museum (Figs. 18-19), and an adult specimen in Limpus coll. (Figs. 16-17). They have a shape and a pattern very close to *L. limpusi* but slightly differ by their large size (up to 146 mm) and a more inflated outline. Only three specimens are available, which is not sufficient to allow a precise identification. They can be considered either as a southern range extension of *L. limpusi*, showing a variation in size and outline from south to north or, less likely, as a new taxon. Further material is needed to solve this problem. This population shows, more than typical *L. limpusi* does, a clear relationship with *L. mammilla* from the east coast of Australia. A common ancestor, whose previous large geographical range could have been currently reduced into western and eastern populations, separated by a gap of the whole width of southern Australia, is possible.

Although different by their much smaller protoconch, and especially by the absence of axial ribs, these shells may be also compared with *L. quisqualis* Iredale, 1957 from Bass Strait, which has been interpreted up to now as a hybrid between *L. mammilla* and *L. roadnightae*, sympatric at this locality. This interpretation remains uncertain and could be reconsidered.

### Etymology.

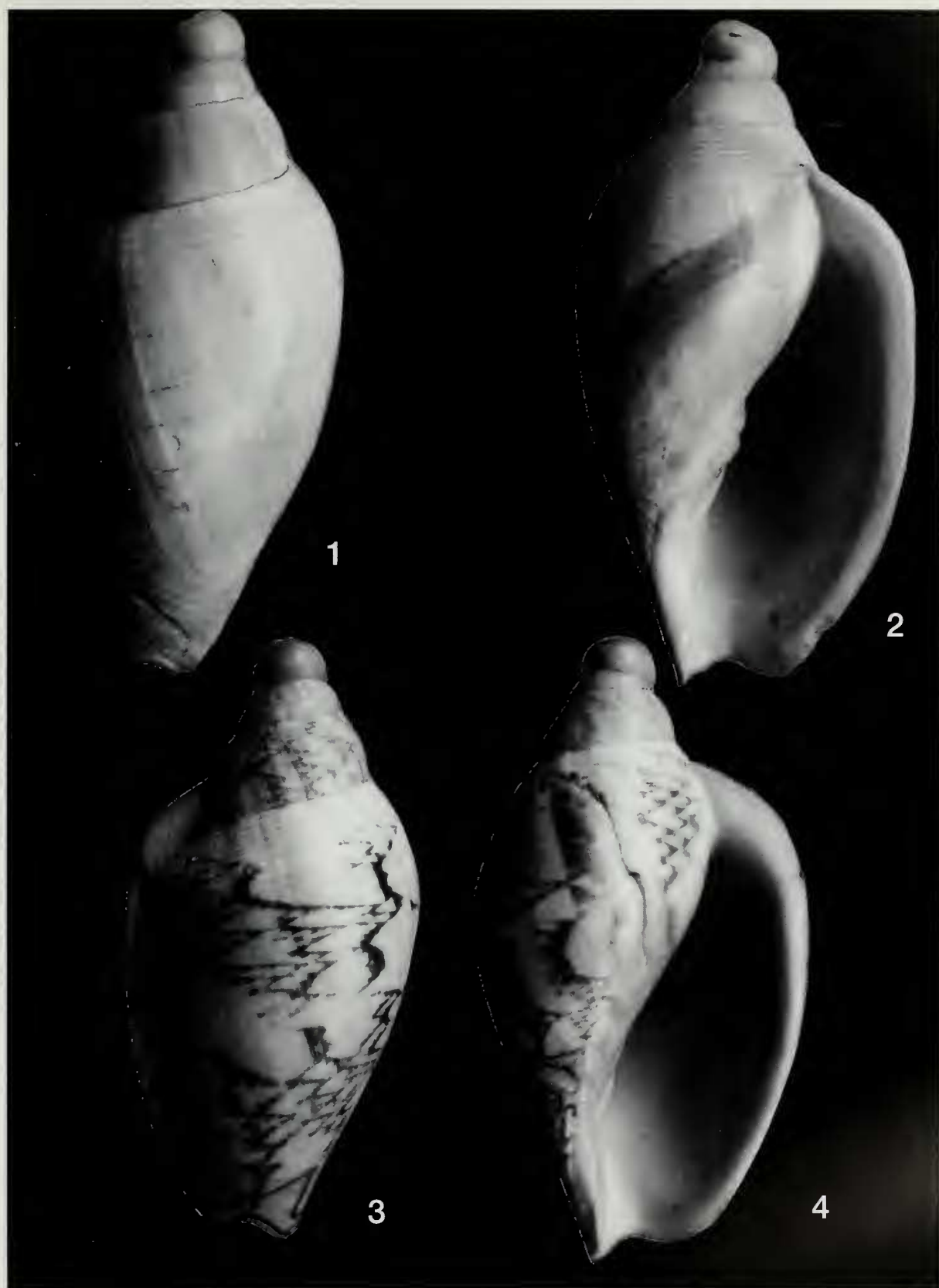
This species is named in honor of Allan Limpus of Bundaberg, a well-known volute collector, who generously gave one of his specimens to the West Australian Museum as holotype.

### CONCLUSION

Until now, the genus *Livonia* included four species: *L. joerinkensi* (Poppe, 1987), *L. nodiplicata* (Cox, 1910), *L. mammilla* (Sowerby I, 1844), and *L. roadnightae* (McCoy, 1881). It now appears to include more species, either in a restricted, still unexplored area, or with a more extended range than expected. The coast of West Australia is probably the richest in future discovery, as the latter problematical *Livonia* leads one to suppose.

### REFERENCE

ABBOTSMITH, F., 1969. Multifform Australian Volutes. Ohio. 132 pp.

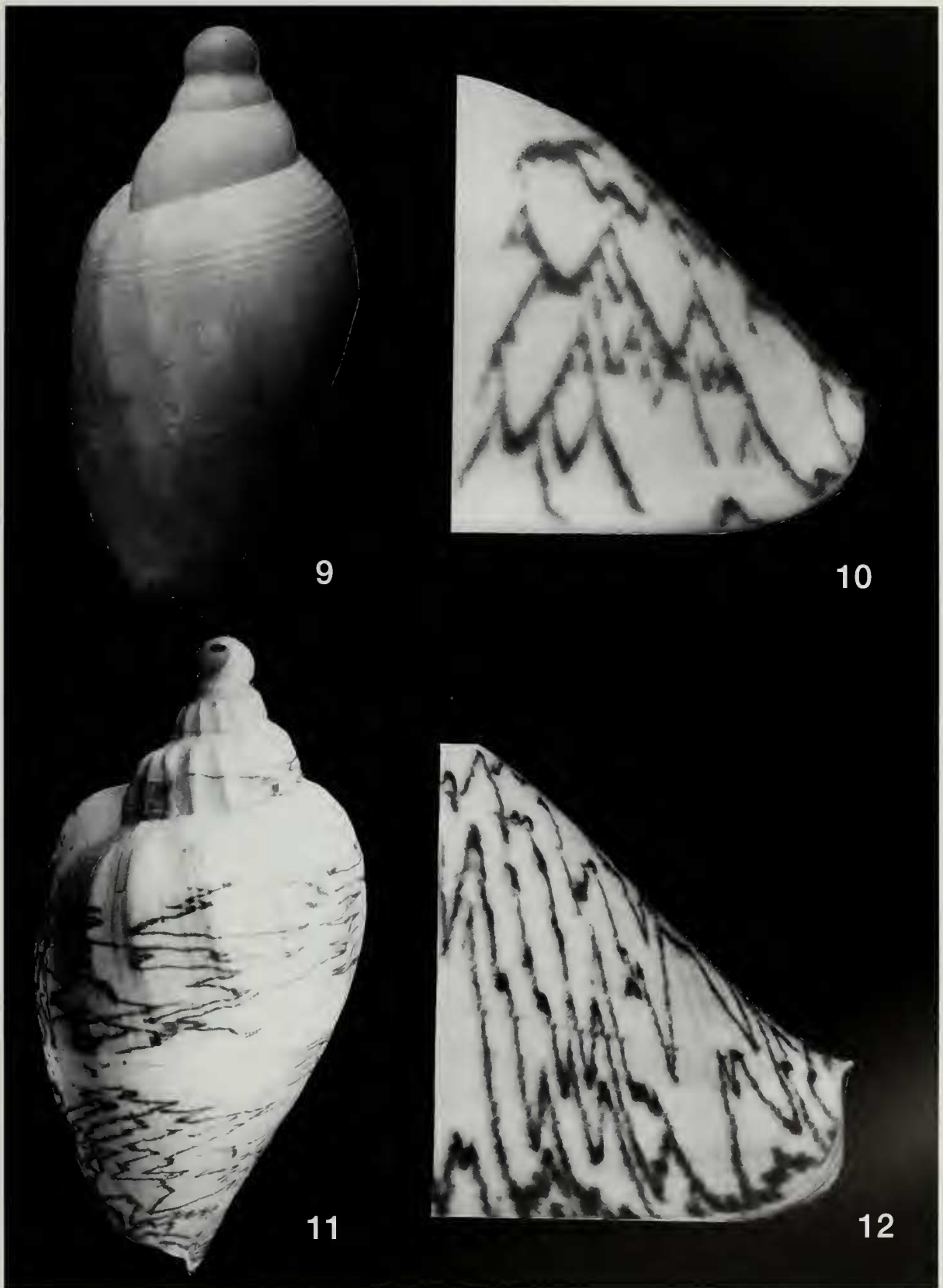


Figs. 1-4. *Livonia limpusi* nov. sp. Figs. 1-2. Holotype. L: 133.4 mm, W: 65.5 mm, WAM S.12011 (West Australian Museum, Perth, West Australia). Figs. 3-4. Paratype 1. L: 114.8 mm, W: 61.2 mm, Bail coll.

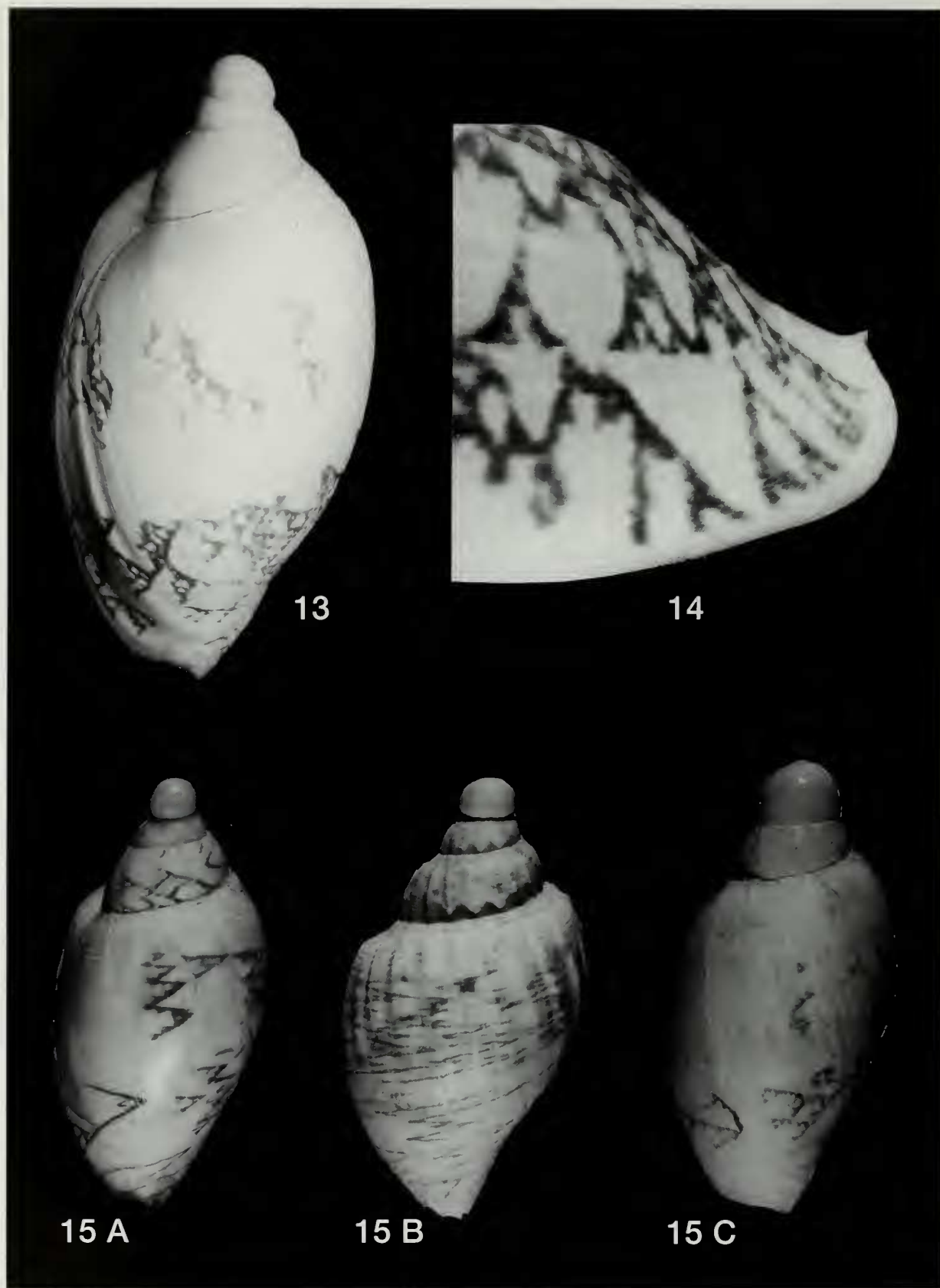


Figs. 5-8. *Livonia limpusi* nov. sp. Figs. 5-6. Paratype 2. L: 100.5 mm, W: 50.0 mm, Limpus coll. Figs. 7-8. Paratype 3. L: 125.9 mm, W: 64.3 mm, Limpus coll.

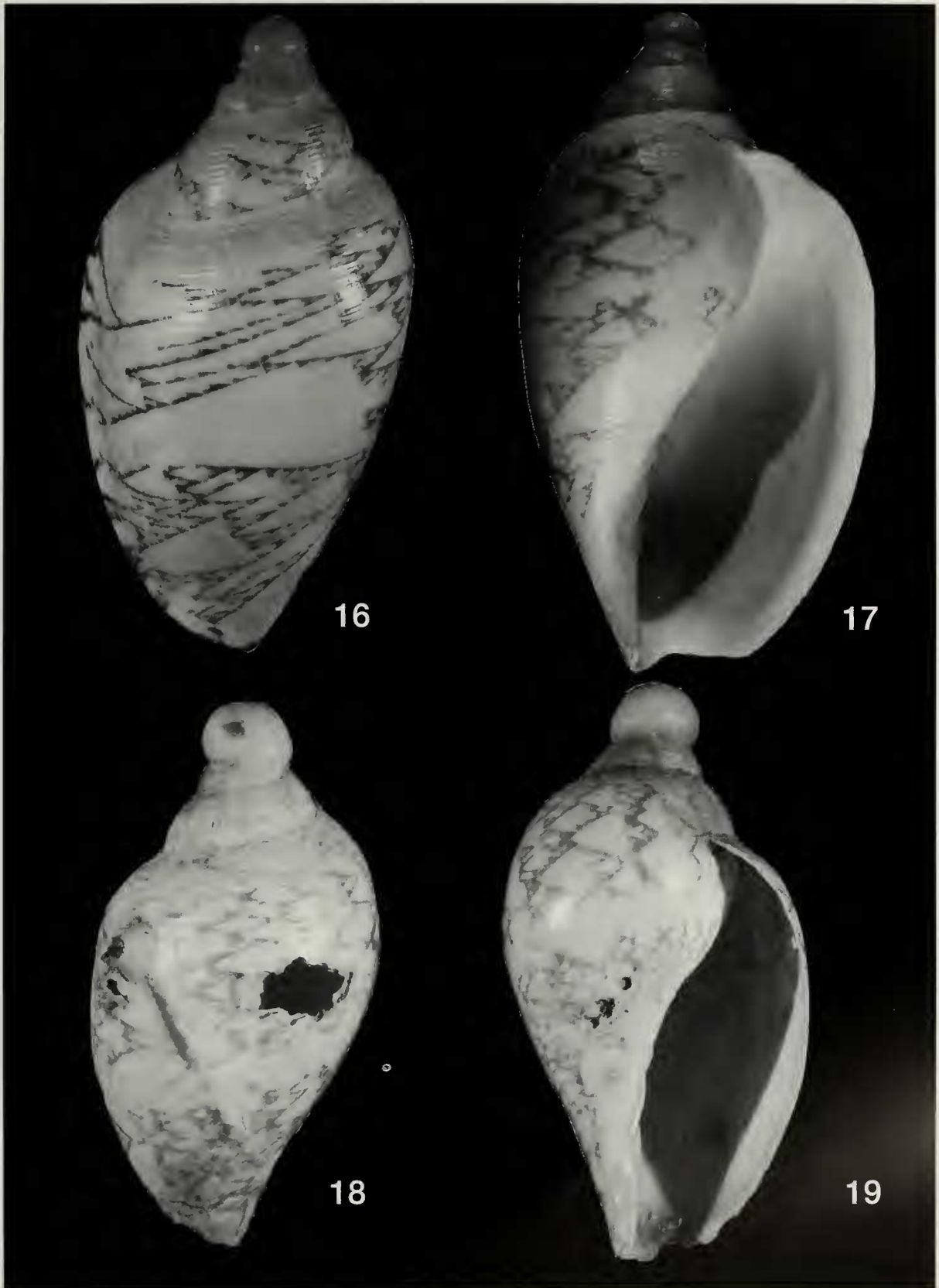




**Figs. 9-10.** *Livonia limpusi* nov. sp. Fig. 9. Paratype 4. L: 116.0 mm, W: 63.0 mm, Douté coll. Fig.10. Typical tent-like pattern. **Figs. 11-12.** *Livonia roadnightae* (McCoy,1881). Fig.11. L: 158 mm. Great Australian Bight, Bail coll. Fig.12. Typical zigzag pattern.



**Figs. 13-14.** *Livonia mammilla* (Sowerby I, 1844). Fig.13. L: 224 mm. Bass Strait Tasmania. Bail coll. Fig.14. Typical tent-like pattern. **Fig.15a.** Juvenile of *L. limpusi* nov. sp. L: 125.9 mm. **Fig 15b.** Juvenile of *L. roadnightae* (McCoy, 1881) L: 129.7 mm. **Fig. 15c.** Juvenile of *L. mammilla* (Sowerby I, 1844) L: 133.7 mm.



**Figs. 16-19.** *Livonia* cf. *limpusi* nov. sp. Figs. 16-17. Off Kalbarri, W.A. 130 m deep, L: 146 mm, Limpus coll. Figs. 18-19. Juvenile from Dorre Island, 23°37' S / 113°04' E, 165 m deep, West Australian Museum.



Fig.20. Geographic distributions around Australia.

- L. limpusi* nov. sp.
- L. roadnightae*
- L. mammilla*